

## **REMARKS**

### **Information Disclosure Statement**

Applicant expresses gratitude that the Information Disclosure Statement was considered by the Examiner.

### **Specification**

Applicant has amended Page 8 at lines 1 and at Paragraph 25, line 5, in accord with the suggestion of the Examiner. It is believed that the specification is now in correct form.

### **Claim Objections**

Claim 8 has been amended to correct a typographical error and is believed to comply with the Examiner's suggestion.

### **Claim Rejections – 35 USC § 102; 35 USC § 103**

Claims 1-3, 5-9, 12-13 were rejected as being anticipated by Mandel, U.S. Patent No. 4,544,428. Claims 1 and 8 were rejected as being anticipated by Enders et al., DE No. 3,826,434.

Claims 1 and 8 are the originally submitted independent claims. Independent Claims 15 and 17 have been newly added. Claim 15 is modeled after original Claim 1. Claim 17 is modeled after original Claim 8.

Claims 1 and 15 relate to a method for reinforcing a cylindrical metal tank. Claims 8 and 17 relate to the article of manufacture, namely the reinforced metal tank.

Briefly the invention is a reinforced metal tank wherein the metal tank is generally cylindrical and has a longitudinal axis. Bands of carbon fiber fabric are wrapped about the metal tank at least

along a portion of the axial height of the tank. The bands extend entirely around the tank and are bonded by adhesive and thus adhered to the tank outside wall. The bands thus surround the outside wall of the tank and are bonded thereto by the adhesive. The bands are applied "passively" as described for example at Paragraph 27 of the application. That is the bands are not tightened about the empty tank. No pressure is placed upon the container. As a consequence, the methodology may be applied to very thin metal containers. In other words, the bands upon being applied to the containers do not provide pressure on the container per se. Rather the bands provide a means for constraint of the container in the event the interior of the container becomes pressurized thereby placing expansive forces on the metal container wall.

The Examiner relied upon the Mandel reference to reject the Independent Claims urging that Mandel taught the claimed subject matter. There are, however, significant differences between what Mandel teaches and the presently claimed invention. First, it is necessary to appreciate the teachings of Mandel. Mandel is designed to provide a compressive hoop about a cylindrical container. This is born out by the teaching for example, Column 2, lines 30-35 wherein it is indicated that the winding operation of the fabric or material that is placed about a cylindrical container depends upon filament tension. Column 1 also teaches beginning at line 49 again that the band which is wrapped around the cylindrical container is, in fact, tensioned during the wrapping operation. Thus the teaching of Mandel requires that the wrapped material be tensioned as it wound about the cylindrical tank.

In contrast, the subject matter of the present invention provides for a passive arrangement wherein there is no tension placed upon the wrapped material. Thus the prior art is totally contrary to the passive wrapping accomplished by the presently claimed subject matter.

Further, Mandel does not teach the bonding of the wrapped material by an adhesive to a metal container outside surface. Rather, Mandel teaches that the fibers of the wrapping material are impregnated with a resin (see column 2, lines 20-30). This is a far different construction from the present application wherein the carbon fiber fabric material is bonded or glued or adhered to the outside metal surface.

The Enders reference was also relied upon to reject the Independent Claims 1 and 8. Enders however, fails to teach any wrapping of a cylindrical body or container. Rather as illustrated for example, in Figure 1, Enders teaches the application of strips of material along the longitudinal axis of a container and extending lengthwise along that axis. The strips cover only a portion of the outside surface of the container. As such, there is no wrapping of carbon fiber fabric about the axis of the container wherein the wrapping is substantially perpendicular with respect to that axis. Both functionally and structurally the teachings of Enders are not apt.

For the above reasons, the dependent claims are also distinguished from the Mandel and Enders references alone or in combination. That is elements or features set forth in the independent claims are not suggested or taught by the prior art. Moreover, the Examiner did not rely upon a combination of references cited in his rejection of the independent claims pursuant to 35 USC § 102.

For the reasons articulated above, the additional two independent claims and the claims depending thereon are clearly distinguished from the prior art references. Thus Claim 15 which is directed to the method of the invention is presented to provide text which is definitive and self contained to thereby differentiate the methodology as discussed above from the prior art references. The same is said with respect to Claim 17 which is directed to the metal container or article of manufacture claimed. Dependent Claims 16 and 18 respectively, are directed to features not suggested by any of the references; namely that the bands of carbon fiber employed in the practice of the present invention include the fibers which are predominantly aligned in a manner which is generally perpendicular to the axis of the container. This feature provides an enhancement to the integrity of the method of the invention in that the particular arrangement of the carbon fibers provides for enhanced capacity to reinforce the cylindrical tank by virtue of the appropriate alignment of the carbon fibers.

In view of the foregoing amendments and remarks therefore it is believed that the application in its amended form is allowable. Reconsideration and passage thereof to allowance is earnestly


solicited.

Applicant believes there are no fees due in connection with the filing of this submission, however, should there be a fee due, the commissioner is hereby authorized to charge any such fee, or credit any overpayment of fees to deposit account number 19-0733.

Respectfully submitted,

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